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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/210,545	12/14/1998	KATSUHISA OGAWA	35.C13212	5262

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EXAMINER	
AGGARWAL, YOGESH K	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/210,545	OGAWA ET AL.	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/19/2005 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 30-34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US Patent # 4,768,085), Rashkovskiy et al. (US Patent # 6,181,376) and in further view of Shaw et al. (US Patent # 6,606,122).

[Claim 30]

Hashimoto teaches a color image pickup device (figure 1) comprising an image pickup element, including a two-dimensional array of photodetectors each with a respective color filter (col. 3 lines 37-52). Hashimoto further teaches Each horizontal line l.sub.1, l.sub.2, l.sub.3, . . . is selected with a vertical switch 2a.sub.1, and each pixel signal is selected with an unrepresented

horizontal transfer switch (col. 4 lines 12-15). It would be inherent that the horizontal and vertical readout controls scan the array by reading any pixel i.e. random selection of pixels. Hashimoto also teaches that horizontal lines l1, l2, l3 are readout by simultaneously reading of the two horizontal lines n1H, n2H in forming odd fields while m1H, m2H, m3H, represent combination of horizontal lines l1, l2, l3,... simultaneously read in forming even fields i.e. adjacent horizontal lines are simultaneously read. In the even fields, to interpolate the image signals in the odd fields, combinations shifted by one line from the combinations n1H, n2H are read (col. 3 lines 52-col. 4 line 4).

Hashimoto fails to disclose a block storage means to store image data read out from a target basic block unit of the photodetectors, and from basic block units of photodetectors neighboring the target basic block unit and a signal processing circuit for receiving for receiving analog image data outputted from the interpolation circuit, and for subjecting the analog image data to a processing of at least edge enhancement. However Rashkovskiy et al. teaches a digital camera system (figure 2) having a memory (18) for storing an image and a processor 26 in a computer system used to interpolate various pixels readout from the storage device (col. 3 line 63-col. 4 line 22, figure 3). Rashkovskiy further teaches that red values bordering edges of the image are determined by reference to only two adjacent red pixels and similarly blue values bordering edges of the image are determined by reference to only two adjacent blue pixels (col. 4 line 67-col. 5 line 16) and is therefore read as edge enhancement

Therefore taking the combined teachings of Hashimoto and Rashkovskiy, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a block storage means to store image data read out from a target basic block unit of the

photodetectors, and from basic block units of photodetectors neighboring the target basic block unit to perform interpolation and a signal processing circuit for receiving for receiving analog image data outputted from the interpolation circuit, and for subjecting the analog image data to a processing of at least edge enhancement in order to provide a method for excellent quality, true color images in a cost-efficient manner.

Rashkovskiy teaches a digital camera system (figure 2) having a memory (18) for storing an image and a processor 26 in a computer system used to interpolate various pixels readout from the storage device (col. 3 line 63-col. 4 line 22, figure 3). Rashkovskiy fails to teach wherein all the different elements are provided on a same chip.

However Shaw et al. teaches a camera on a single chip (fig. 10) showing an original image and a subsampled or interpolated image and an exposure buffer (figure 12, element 1220) provided in the support circuitry of the 1002 the same chip to store the image (col. 11 lines 36-44, col. 12 lines 63-col. 13 line 4).

Therefore taking the combined teachings of Hashimoto, Rashkovskiy and Shaw, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have an image sensor, storage and interpolation circuitry be provided on the same chip in order to conserve space, so that miniaturized cameras can be easily built

5. Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US Patent # 4,768,085), Rashkovskiy et al. (US Patent # 6,181,376), Shaw et al. (US Patent # 6,606,122) and in further view of Fujimoto (US Patent # 5,396,592).

[Claims 31 and 32]

Rashkovskiy teaches color filters and bayer matrix (figure 1) but fail to teach a basic block unit of 2x2 photodetectors. However Fujimoto teaches a signal interpolating circuit (figure 1, element 30) comprised of a plurality of integrated circuits 31 having four memories 40, 41, 42,43 for holding pixel data of 2x2 dots, and operational elements 44-47 serving as interpolative means (col. 6 lines 40-56, col. 5 lines 4-21).

Therefore taking the combined teachings of Hashimoto, Rashkovskiy, Shaw and Fujimoto, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a basic block unit of 2x2 photodetectors to be used for interpolation in order to have an inexpensive circuit capable of performing at high speed.

[Claim 33]

Hashimoto, Rashkovskiy, Shaw and Fujimoto fail to teach color filters of color Cyan, Magenta, Yellow, and Green and each basic block unit is a 2x2 block partition of the basis 4x2 pattern of a complementary color filter array. However Official Notice is taken of the fact that color filters of color Cyan, Magenta, Yellow, and Green and each basic block unit is a 2x2 block partition of the basis of a 4x2 pattern are very well known in the art in order to have color filter array that provides signals that can be efficiently processed. . [As applicant has not traversed the old and well known statement above, the use of color filters of color Cyan, Magenta, Yellow, and Green and each basic block unit is a 2x2 block partition of the basis of a 4x2 pattern is taken as admitted prior art. See MPEP 2144.03(c)]

Therefore taking the combined teachings of Hashimoto, Rashkovskiy, Fujimoto and Official Notice, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have color filters of color Cyan, Magenta, Yellow, and Green and each basic

block unit is a 2x2 block partition of the basis of a 4x2 pattern are very well known in the art in order to have color filter array that provides signals that can be efficiently processed.

[Claim 34]

Fujimoto teaches calculating interpolation values of respective pixels of a basic block of 3x3 units (col. 8 lines 58-65).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
March 3, 2006

DAVID OMETZ
SUPERVISORY PATENT EXAMINER